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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,056	01/28/2004	Hiroaki Mochizuki	118328	9458
25944	7590	03/10/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGO, HUYEN LE	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,056	<b>Applicant(s)</b> MOCHIZUKI, HIROAKI	
	<b>Examiner</b> Julie-Huyen L. Ngo	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/20/05, 11/17/05</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS filed 1/10/06 &amp; 2/2/06</u> .   |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's arguments with respect to the amended claims 1-5, 8-9 in the Response filed on November 17, 2005 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this is Final action.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraide Masao (JP2001-100251) in view of Hiroshi et al. (JP64-052129) provided in IDS.

Masao teaches (Figs. 1-10) forming an electro-optical device, comprising:

#### Claims 1, 2 and 11:

- a substrate 10 having an image display region and a peripheral region surrounding the image display region;
- a data line 6a;
- a scanning line 3a extending in a direction crossing the data line;
- a first switching element 30 disposed in the image display region, the first switching element being applied to a scanning signal is applied by the scanning

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line; and the first switching element including a semiconductor layer 1a having a source, drain and a channel;

- a pixel electrode 9a formed within the image display region, the pixel electrode being applied to an image signal is applied, by the data line, via the first switching element;
- a first light shielding film 11a formed in the image display region between the substrate and the first switching element, the first light shielding layer being in complete overlap with the source, the drain and the channel of the first switching element in plan view as shown in Fig. 8;
- a second switching element 103a to determine whether the image signal will be applied to the data line, the second switching element being located in the peripheral region, the second switching element including a semiconductor layer 1a having a source, drain and a channel;
- an interlayer insulating film 12,
- a second light shielding film 53, formed in the peripheral region on an opposite side of the interlayer insulating film 12 from the second switching element 103a with the interlayer insulating film 12 there between, the second light shielding film 53 overlapping the source region and drain region of the second switching element in plan view, the second light shielding film 53 being divided into separate sections with channel region of the second switching element as a boundary between the separate sections,

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Claim 9:

- the first light shield film 11a being formed to correspond to the data line and the scanning line in the image display region as shown in Fig. 3,
- the second light shielding member being formed at the same time as the first light shielding member (paragraph 28-29),

wherein

Claim 3:

- the second switching element having a laminated structure of a semiconductor layer, an insulating film, and an electrode film 115/5a, and the second light shielding film 53 overlapping at least a portion of the electrode film in plan view.

Claim 4:

- the electrode film 115/5a being formed in portions corresponding to the channel region

Claim 5:

- the sections of the second light shielding film and the electrode film being rectangular in plan view, and each section of the second light shielding film overlapping the electrode film in the long side of a rectangle in plan view.

Claim 6:

- the second switching element inherently being formed at the same time as the forming of the first switching element of the electro-optical device (paragraphs 18-20) since both switching elements are formed on the same semiconductor layer 1a, as shown in Figs. 8-10;

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Claim 8:

- the second light shielding film being made of light shielding material (metal thin films Ti, Cr, W, Ta, Mo and Pb in paragraph 15).

However, Masao fails to disclose the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view.

Hiroshi et al. teach (abstract and Figs. 1-2) forming the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view for decreasing the leak current as taught by Hiroshi et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify an electro-optical device as Masao disclosed with the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view for decreasing the leak current, as taught by Hiroshi et al.

Claims 1-6, 8-9 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murade Masao (US6330044B1) in view of Hiroshi et al. (JP64-052129) as provided in IDS.

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Murade Masao teaches (Figs. 23-35) forming an electro-optical device, comprising:

Claims 1, 2 and 11:

- a substrate 10 having an image display region and a peripheral region surrounding the image display region;
- a data line 2;
- a scanning line 3 extending in a direction crossing the data line;
- a first switching element 102 disposed in the image display region, the first switching element being applied to a scanning signal is applied by the scanning line; and the first switching element including a semiconductor layer 1a having a source, drain and a channel;
- a pixel electrode 14 formed within the image display region, the pixel electrode being applied to an image signal is applied, by the data line, via the first switching element;
- a first light shielding film 7 formed in the image display region between the substrate and the first switching element, the first light shielding layer being overlap with the source, the drain and the channel of the first switching element in plan view as shown in Figs. 24-30;
- a second switching element to determine whether the image signal will be applied to the data line, the second switching element being located in the peripheral region, the second switching element including a semiconductor layer 1a having a source, drain and a channel;

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- an interlayer insulating film 11,
- a second light shielding film 46, formed in the peripheral region on an opposite side of the interlayer insulating film 12 from the second switching element with the interlayer insulating film 12 there between, the second light shielding film 53 overlapping the source region and drain region of the second switching element in plan view, the second light shielding film 46 being divided into separate sections with channel region of the second switching element as a boundary between the separate sections as shown in fig. 33,

Claim 9:

- the first light shield film 7 being formed to correspond to the data line and the scanning line in the image display region,
- the second light shielding member 46 being formed at the same time as the first light shielding member 7,

wherein

Claim 3:

- the second switching element 46 having a laminated structure of a semiconductor layer, an insulating film, and an electrode film 52/12/45, and the second light shielding film overlapping at least a portion of the electrode film in plan view.

Claim 4:

- the electrode film 45/48/49 being formed in portions corresponding to the channel region



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Claim 5:

- the sections of the second light shielding film 46 and the electrode film being rectangular in plan view, and each section of the second light shielding film overlapping the electrode film in the long side of a rectangle in plan view.

Claim 6:

- the second switching element inherently being formed at the same time as the forming of the first switching element of the electro-optical device with same layer structures 7/11/12/13/15.

Claim 8:

- the light shielding film being made of light shielding material.

Claim 10:

- the thickness of layer 11 is 1000 angstroms=100nm being less than 3000nm, thus the distance between the light shielding film and the second switching element being less than 3000 nm .

However, Murade Masao fails to disclose that (a) the first light shielding layer being in complete overlap with the source, the drain and the channel of the first switching element in plan view; (b) the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view.

Hiroshi et al. teach (abstract and Figs. 1-4) forming (a) the first light shielding layer being in complete overlap with the source, the drain and the channel of the first

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switching element in plan view for reducing leak current and the parasitic capacity; (b) the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view for reducing leaking current.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the electro-optical device as Murade disclosed with (a) the first light shielding layer being in complete overlap with the source, the drain and the channel of the first switching element in plan view for reducing leak current and the parasitic capacity; (b) the second light shielding film overlapping the source region and drain region and a portion of the channel region of the second switching element in plan view for reducing leaking current, as taught by Hiroshi et al.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (571) 272-2295. The Examiner can normally be reached on Monday-Thursday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (571) 272-2293.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 6, 2006



***Julie -Huyen L. Ngo***  
**Primary Examiner**  
Art Unit 2871